

PRODUCTION OF METAL PYRITHIONE-CONTAINING CALCIUM SILICATE

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Ref. 1

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Abstract of JP 10025111 (A)

PROBLEM TO BE SOLVED: To improve the water solubility and heat resistance of the metal pyrithione in the subject calcium silicate without deteriorating its antimicrobial effect or antifungal effect by ion exchange of another kind of metal ion for the Ca ion in calcium silicate followed by coordinating pyrithione with the introduced metal ion. **SOLUTION:** The Ca ion in calcium silicate is subjected to ion exchange with another kind of metal ion, and pyrithione is coordinated with the introduced metal ion. For example, a metal ion exchanger for the calcium silicate is suspended in water, and an aqueous solution of sodium pyrithione is reacted with the resultant suspension. Other metal ions pref. include Zn, Cu and Ni ions. The calcium silicate to be used is pref. at least one kind selected from tobermorite, xonotlite, wallastonite and noncrystalline gel-like calcium silicate.

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Particulars of KOKAI (Laid-Open) Specification

Patent KOKAI (Laid-Open) No. 10-25111

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Title of the Invention: PRODUCTION OF METAL PYRITHIONE-CONTAINING CALCIUM SILICATE

(Notes *1: at laid-open date *2: Names of individuals and corporations have been phonetically translated.)

English Language Translation of Selected Parts

[Claim 1]

A method for producing a metal pyrithione-containing calcium silicate, comprising:

ion exchanging Ca ion contained in calcium silicate with other kind of metal ion so as to incorporate the metal ion into the calcium silicate; and

coordinating pyrithione with the introduced metal ion.

[Claim 2]

The method for producing a metal pyrithione-containing calcium silicate according to claim 1,

wherein the calcium silicate is at least one selected from tobermorite represented as $5\text{CaO} \cdot 6\text{SiO}_2 \cdot 5\text{H}_2\text{O}$, xonotlite represented as $6\text{CaO} \cdot 6\text{SiO}_2 \cdot \text{H}_2\text{O}$, wollastonite represented as $\text{CaO} \cdot \text{SiO}_2$ and amorphous gel-like calcium silicate.

[Claim 3]

The method for producing a metal pyrithione-containing calcium silicate according to claim 1,

wherein the other kind of metal ion is at least one selected from Zn ion, Cu ion and Ni ion.

[Paragraph 0002] (Prior art)

It has been known that metal pyrithione (hereinafter

referred to as metal PT), in particular, ZnPT shows an antimicrobial effect or an antifungal effect. Hence, such a metal PT has been used in cosmetics such as shampoo. However, the applications of metal PT have been limited because it may be poor in water solubility or oxidative decomposition property at high temperatures.

[Paragraph 0020] (Example 1)

Zinc nitrate hexahydrate 7.44 grams (Zn content 25.0 mmol) and water 125 ml were charged into a 200 ml four-necked flask such that they were dissolved. Xo 5.00 grams was added to the solution and it was stirred at a reaction temperature 20 degrees Celsius for 4 hours. After filtration of the solution, it was washed with water of about 100 ml and was then vacuum dried at 100 degrees Celsius so as to prepare XoZn 4.94 g having a Zn content of 7.0 % by weight.

[Paragraph 0022] (Example 3)

XoCu 5.45 grams having a Cu content of 21.2 % by weight was prepared by the same process as that of Example 1 except that cupric chloride dehydrate 3.41 grams (Cu content 20.0 mmol) was used instead of zinc nitrate hexahydrate.

[Paragraph 0027] (Example 8)

XoZn 4.94 grams obtained in Example 1 and water 125 ml were charged into a 200 ml four-necked flask and they were then stirred. To the suspension added was 40% NaPT solution 14.00 grams (37.6 mmol) and it was then subjected to a reaction at 20 degrees Celsius for 4 hours while adjusting a pH to 11 using hydrogen chloride. After filtration of the solution, it was washed with water of about 100 ml and was then vacuum dried at 100 degrees Celsius so as to prepare XoZnPT 5.11 g having a ZnPT content of 11.6 % by weight and a PT/Zn molar ratio of 0.98.

[Paragraph 0032] (Example 13)

XoCuPT 5.85 g having a CuPT content of 37.6 % by weight and a PT/Cu molar ratio of 0.90 was prepared by the same process as that of Example 8 except that XoCu obtained in Example 3 of 5.00 grams was used instead of XoZn.